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(58) Field of Search by ISA

INT CL<sup>6</sup> B29C , B65D

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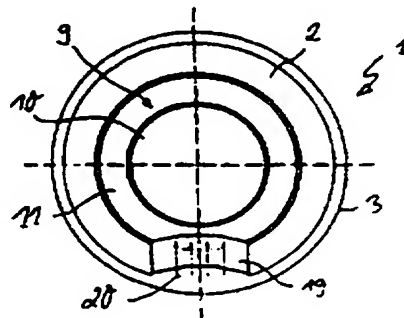
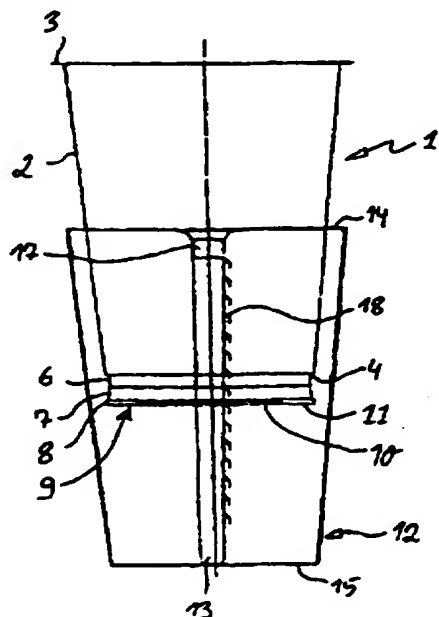
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(54) Abstract Title

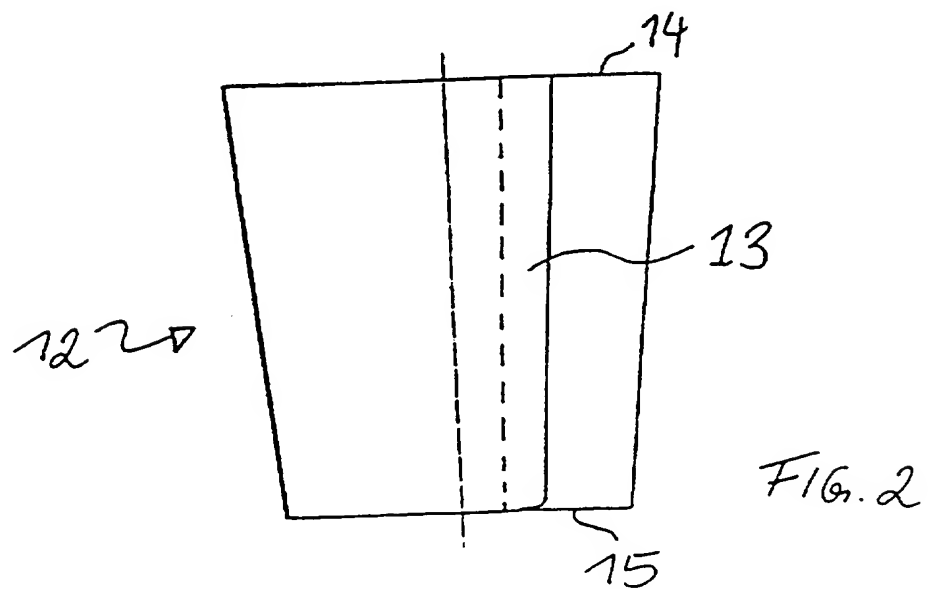
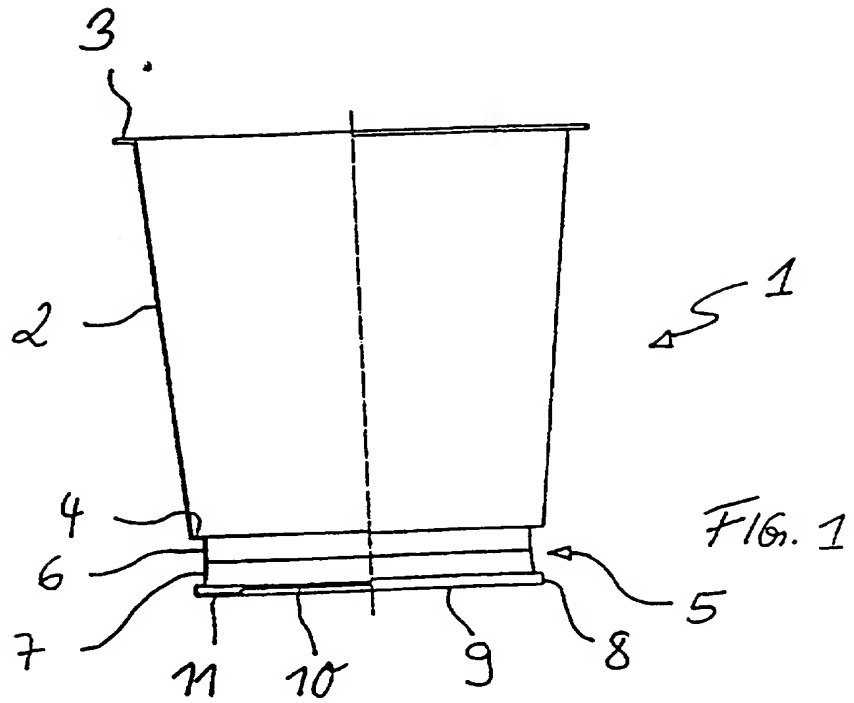
**Process for producing a cup-shaped combination packing container, the plastic inside and outside parts for such a process & container produced by this process**

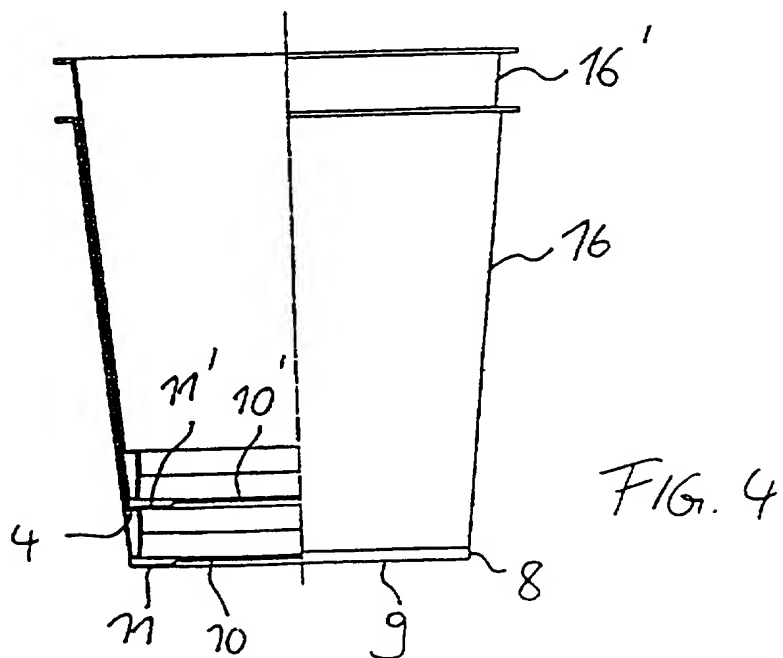
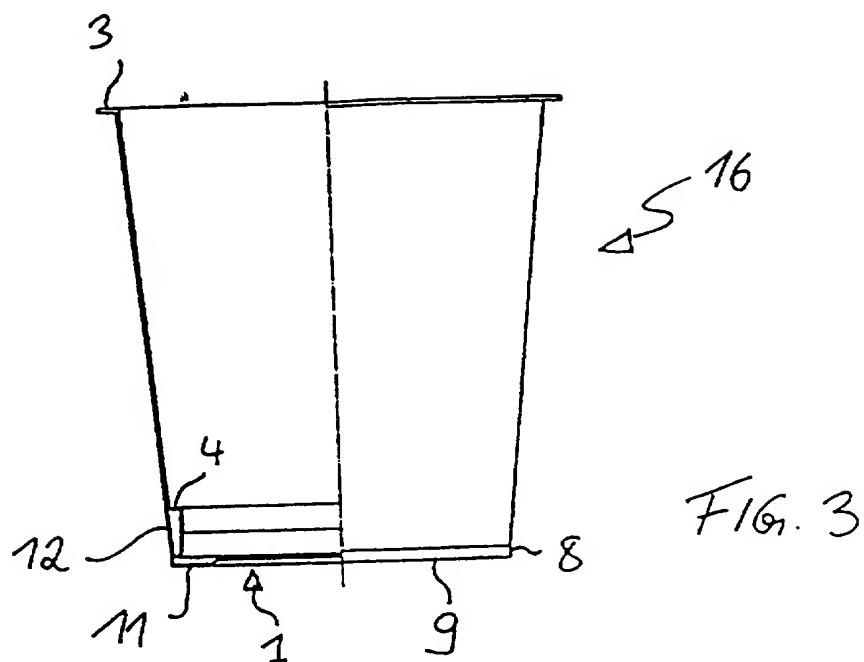
(57) This invention concerns a process for producing a cup-shaped combination packing container (16) which consists of an inner cup-shaped plastic pan (1) which tapers inward moving downward and an outer casing-like plastic part (12) which lies adjacent to and surrounds the inner cup-shaped plastic part (1). The casing-like outer part (12) is pushed over the finished extruded cup-shaped plastic inner part (1) and subsequently affixed to it, which improves the rigidity of the completed container and simplifies production and logistics. Moreover, a combination packing container is disclosed which has a plastic inner part with a recess (19, 19') which stands back inwardly for receiving additional objects (20) between the plastic inner part and the outer part pushed over it.



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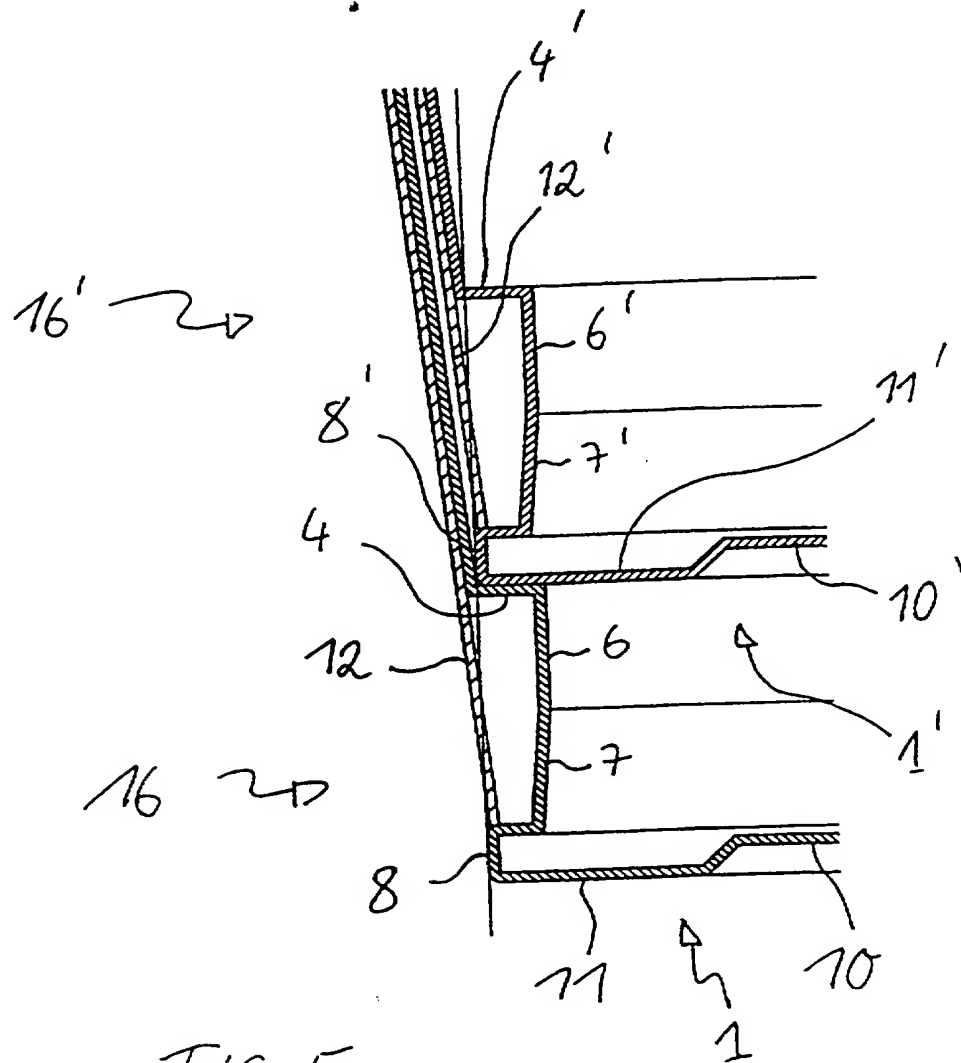
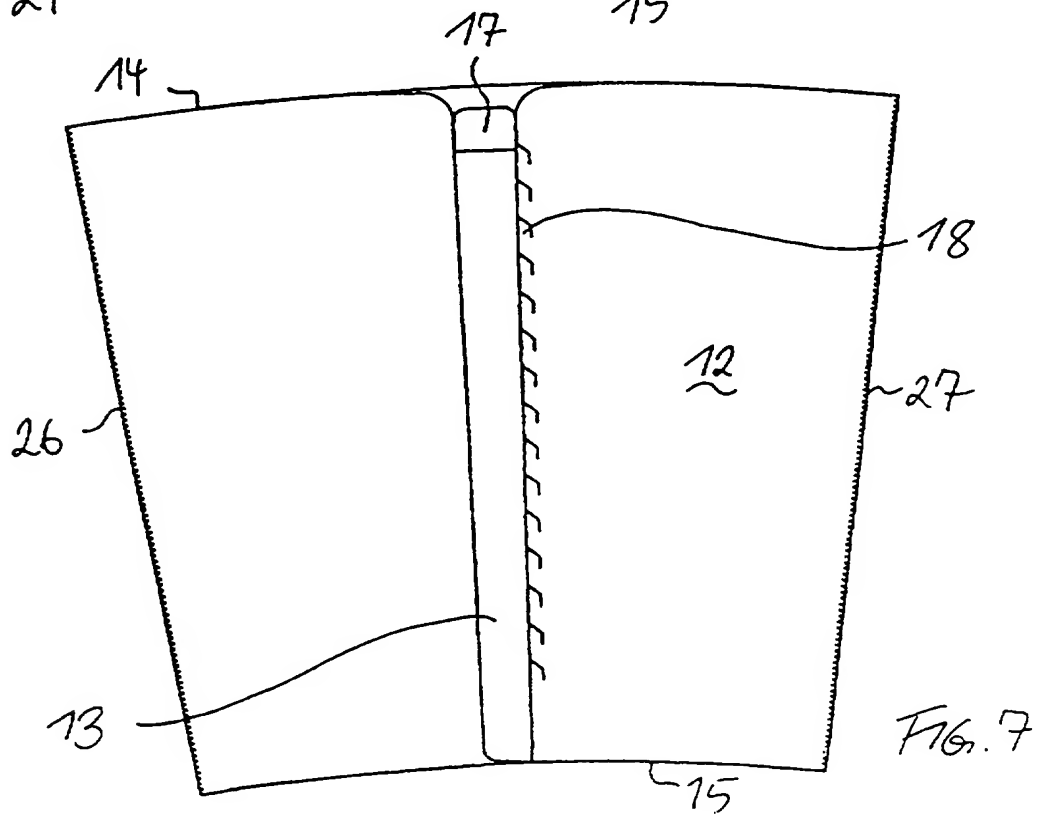
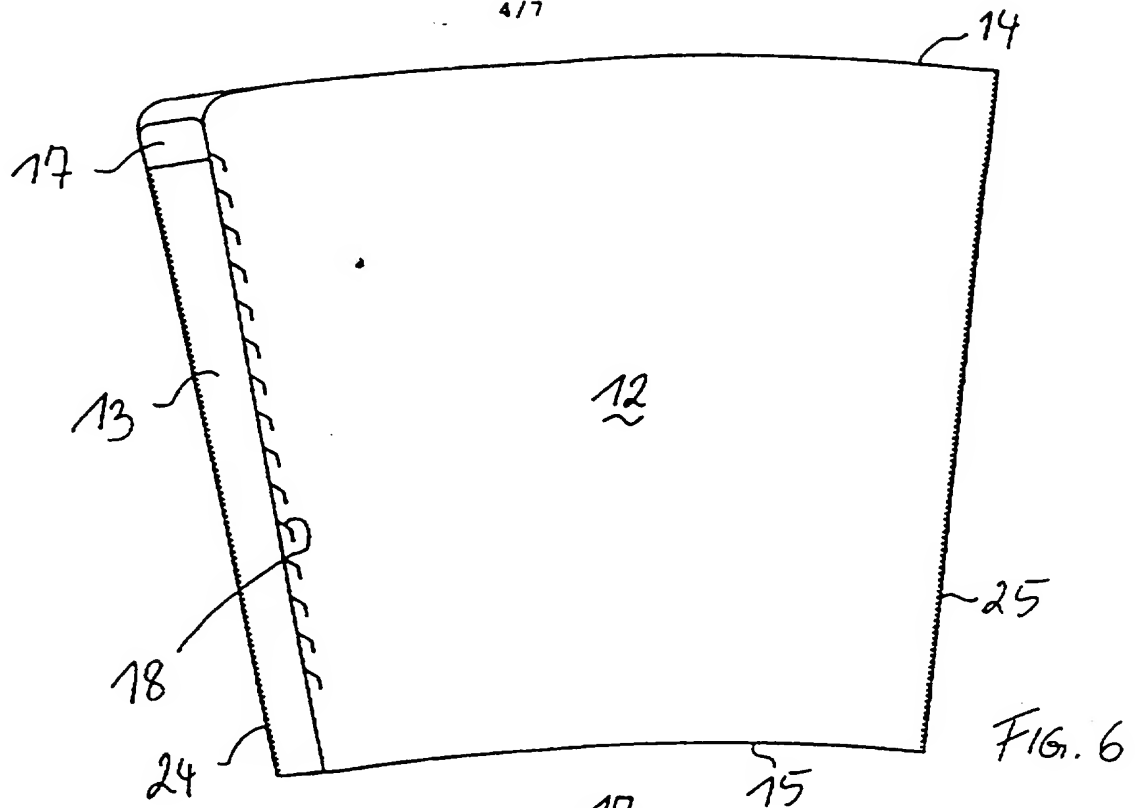
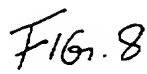
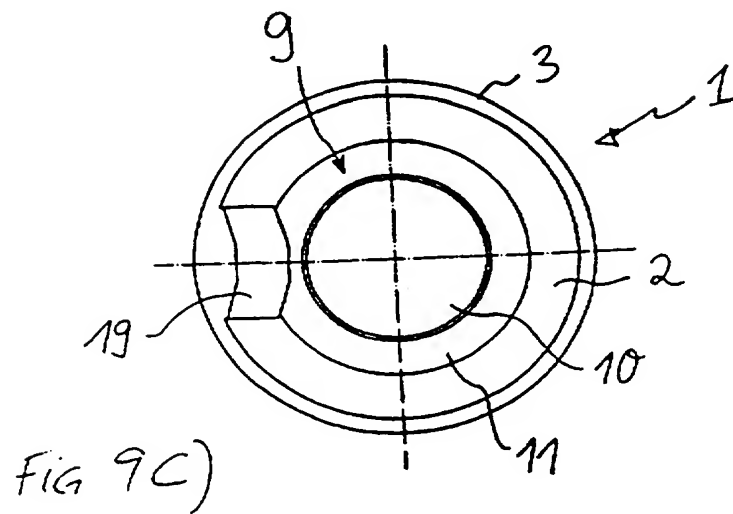
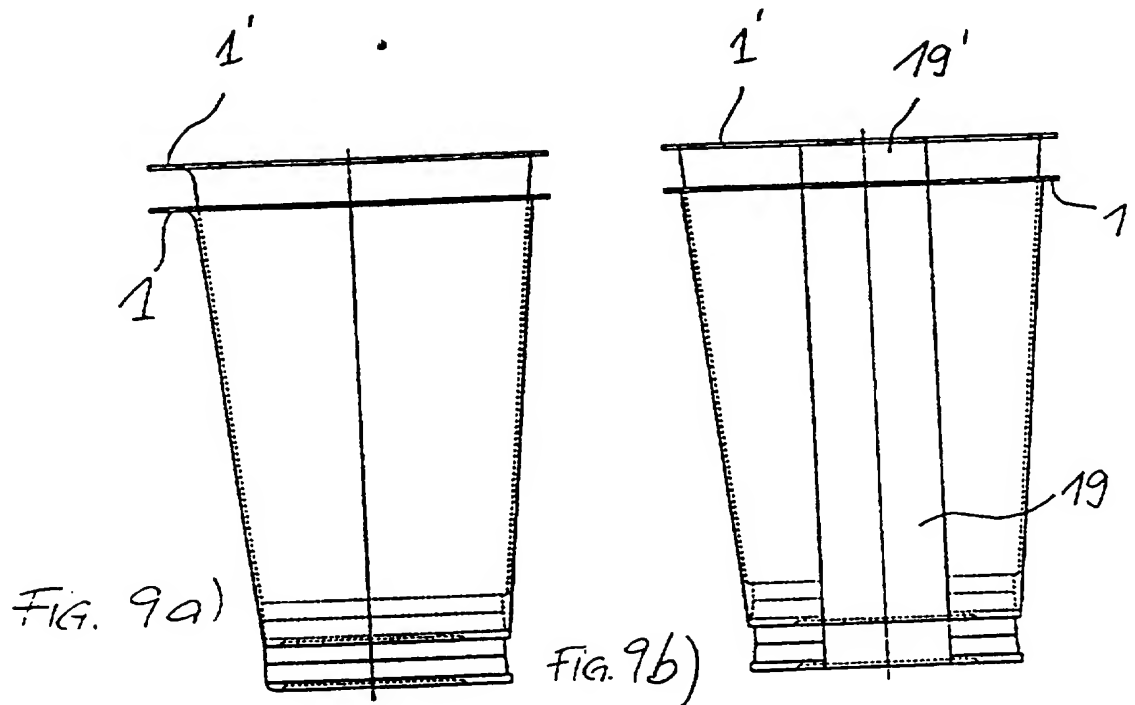


FIG. 5

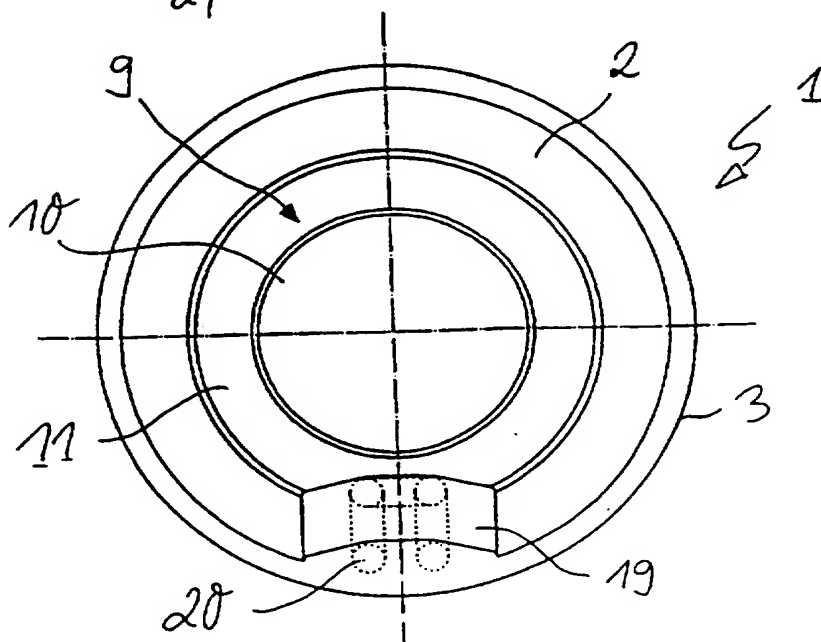
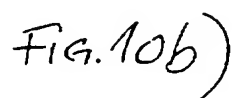
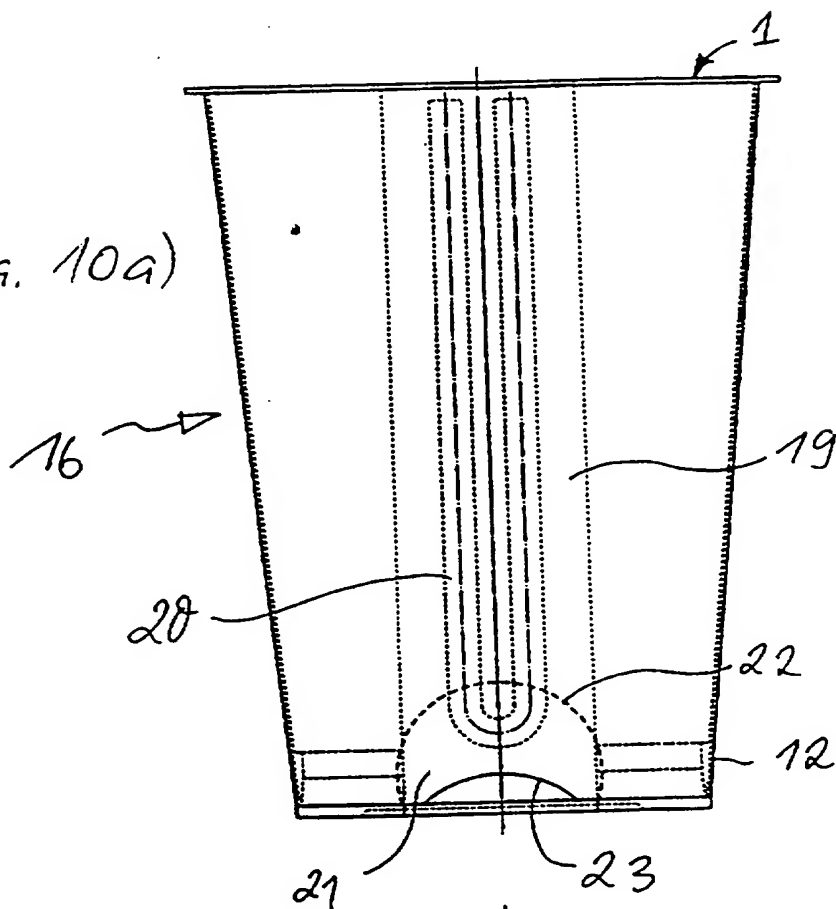
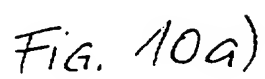
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## DESCRIPTION

### PROCESS FOR PRODUCING A CUP-SHAPED COMBINATION PACKING CONTAINER, THE PLASTIC INNER AND OUTER PARTS FOR SUCH A PROCESS AND THE COMBINATION PACKING CONTAINER PRODUCED BY THIS PROCESS

#### FIELD OF TECHNOLOGY

This invention relates to the field of packaging. It concerns a process for producing a cup-shaped combination packing container which consists of an inner cup-shaped plastic part which tapers inward moving downward and an outer casing-like plastic part which lies adjacent to and surrounds the inner cup-shaped plastic part. It further concerns an inner plastic part and an outer plastic part for such a process and a combination packing container produced by this process.

Combination packing containers of the aforementioned type are known from earlier patent specifications, EP-B1-0 102 522 and EP-B1-0 408 515, filed by the applicant, the disclosure of which forms an express part of this application.

#### PRIOR ART

Stackable combination packing containers in which an inner cup-shaped plastic part, generally deep drawn from a sheet, is cased in an outer part made of another material, e.g. paper, cardboard material or another plastic, have various advantages. Firstly, the cup can be optimally adapted to its application by the use of two different materials. Thus, for example, it is advantageous when the contents of the packaging is frozen or heated to use an outer part made of a material which has a thermally insulating effect. Secondly, the use of a separate outer part has the advantage that the outer part can be printed with images, text, advertising, instructions for use, etc. separately from the container, thus allowing a clearly better printing quality. Furthermore, the separation of the container into individual parts presents significant

advantages in terms of refuse disposal (recycling). Finally, the double-layered design of the container achieves an increase in mechanical rigidity which is particularly advantageous in the event of transportation in multi-layered packing drums.

This and other advantages have lead to the fact that combination packing containers have found wide and increasing use as yoghurt, ice cream and margarine pots and for other, similar applications.

During the production of the previously known combination packing containers, the generally printed, casing-like outer part is produced first. In the case of a casing made of cardboard material, in addition a suitable cut-out is wound around a mandrel and its edges are overlapped and glued together. The outer part is then placed inside the deep drawing mould of a plastic deep drawing machine. Subsequently, the inner plastic part is deep drawn into the outer part as described in EP-B1-0 102 522 cited above. In this way, the deep-drawn inner plastic part connects positively with the outer part to form the finished combination packing container. Suitable additional developments of the outer part such as, for example, the crimping over of the lower edge (12 in Fig. 1 of EP-BI-0 102 522) or an elevation in the form of a peripheral channel (16 in Fig. 1 of EP-BI-0 102 522) ensure that the positive connection is stable and permanent and is achieved without gluing the inner and outer parts. In order to facilitate the subsequent separation of the two parts, additional separating elements, such as the separator strips described in EP-B1-0 408 515, may be provided on the outer part.

Although it has proved to be highly successful in practice, the known process for producing combination packing containers described above does present certain disadvantages. Due to the direct positive connection made during the deep drawing process between the inner plastic part and the printed outer part which is matched to the subsequent container contents, the finished container is specific to its subsequent application. Thus, for example, if the various printed yoghurt pots required for continuous production by a manufacturer of various yoghurt products are held ready in the warehouse, a considerable amount of space will be required since the finished cups must be stored separately according to type. If the cups are manufactured at another location and transported to the place of filling, transportation costs are also increased.

A further significant disadvantage of the known process lies in the complexity of the machines used. Instead of a simple deep drawing machine in which the cup-shaped container is produced by means of deep drawing from a sheet, specially produced, expensive and complex machine groups are required for the known process which form and glue the outer parts from printed cut-outs at a first station, then insert the finished outer parts into the special deep drawing moulds of a special deep-drawing device with great precision using a transfer station, before the deep drawing machine finally deep draws the inner plastic part into the outer part.

A further disadvantage of the known process lies in the degree of achievable axial resistance to crushing of the finished container. As can be seen from Fig. 1 of EP-B1-0 408 515, the container usually has a peripheral indent (3 in Fig. 1 of EP-B1-0 408 515) which serves as a support shoulder to improve stackability. Due to the production process, the indent is present in both the outer part and the adjoined inner plastic part. Despite the inherently reinforcing composite structure of the container, the indent nevertheless creates a weakness in the container wall to axial crushing forces, i.e. forces vertical to the container base, because the container wall in the area of the indent tends to crease. This type of weakness of the container to axial crushing forces is undesirable particularly if the filled and sealed containers are to be stacked directly one on top of another in several layers on a pallet or similar arrangement.

## PRESENTATION OF THE INVENTION

The object of this invention consists in identifying a process for producing a combination packing container made of an inner plastic part and a casing-like outer part which avoids the aforementioned disadvantages, which simplifies the production equipment, reduces the transport and storage costs for the finished containers and improves the axial rigidity of the container, and which identifies a plastic inner part and an outer part suitable for the process and a combination packing container produced by the process.

The object is achieved by a process of the type described in the introduction in that the casing-like outer part is pushed over the finished, extruded cup-shaped inner plastic part and subsequently affixed to the cup-shaped inner plastic part. The core of the invention consists of

producing or extruding the outer part and the inner plastic part separately of each other and subsequently connecting the two parts together by pushing the outer part over the inner part and affixing it to the inner part. In this way it is possible to produce non-type-specific cup-shaped inner plastic parts using simple deep drawing machines which need only be connected to the corresponding printed or otherwise finished outer parts to form the finished combination packing container later, as and when required. This increases flexibility in production and simplifies storage and transportation considerably. At the same time, it means that the inner plastic parts can be produced in-line using simplified machines directly at the container filling machines and then be connected to the specific outer parts later in the warehouse.

In principle, it is conceivable to glue the outer and inner parts together to form the combination packing container. However, this renders the subsequent separation of the two parts more difficult. In addition, it requires additional gluing stations at which the gluing process is carried out. In a preferred embodiment of the process described in the invention a cup-shaped inner plastic part is therefore used which comprises engaging means into which the casing-like outer part engages, in such a manner that it can disengage, in order to affix it to the cup-shaped inner plastic part. This has the advantage that the finished combination packing container can be produced simply by inserting one part inside the other, and that the outer part can subsequently be separated from the inner part very easily in order, for example, to read the printed inside of the outer part, or to separate the various types of material used in the container for separate disposal or recycling.

A preferred development of this embodiment is characterised in that the engaging means comprise a peripheral shoulder positioned in the base area of the cup-shaped inner plastic part, the external diameter of which is greater than the internal diameter of the lower edge of the casing-like outer part, that when the lower edge of the casing-like outer part is pushed over the cup-shaped inner plastic part it is pushed over the peripheral shoulder until it engages behind the shoulder, that the engaging means further comprise an upper outward projecting edge on the cup-shaped inner plastic part, and that when the upper edge of the casing-like outer part is pushed over the cup-shaped inner plastic part it is pushed up against the edge and after engaging is held between the edge and the peripheral shoulder. In this way a particularly

simple method of affixing the outer part is achieved. At the same time, the casing-like outer part can absorb any axial crushing forces applied to it without weakening.

The casing-like outer part can be produced in various ways. In a first alternative embodiment the casing-like outer part is produced by winding a cut-out into a casing and gluing the edges together in an overlap area. In this way, the outer part can be pushed over the inner plastic part without the need for further measures.

In a second alternative embodiment the casing-like outer part is produced by folding a cut-off along two fold lines and gluing the edges together in an overlap area. The glued outer part then exists in a flattened form and thus can be stacked, transported and stored simply in a space-saving manner. The flattened outer parts can then be shaped in a tube and pushed over the inner plastic parts as and when required.

The inner plastic part described in the invention is characterised in that it is cup-shaped and tapers inward moving downward, and that engaging means are provided on the inner plastic part in which the casing-like outer part can engage to affix itself to the cup-shaped inner plastic part in such a manner that it can disengage.

A preferred embodiment is characterised in that the engaging means comprise a peripheral shoulder positioned in the base area of the inner plastic part, the external diameter of which is greater than the diameter of the lower edge of the casing-like outer part, and that the engaging means further comprise an upper, outward projecting edge on the cup-shaped inner plastic part, in particular in the form of a **sealing flange**, against which edge the upper edge of the casing-like outer part pushes when it is pushed over the cup-shaped inner plastic part.

In a particularly preferred development of this embodiment a forward projecting peripheral indent is provided in the base area of the cup-shaped inner plastic part to improve stackability. The peripheral indents forms the upper limit of a peripheral rear inset section which is delimited below by the peripheral shoulder. At the same time, the rear inset section also facilitates the induction of crushing forces into the casing-like outer part.

By means of the process described in the invention for the separate production of the inner plastic and outer parts, it is possible, in principle, to give the inner plastic part a shape differs in certain areas at least from the shape of the casing-like outer part. This advantage can be used to achieve a geometrically defined space accessible from the outside between the inner plastic part and the outer part without reducing stability or creating any other disadvantages which can be used for receiving objects such as drinking straws, spoons or other consumption aids or promotional gifts, etc. A corresponding preferred embodiment of the inner plastic part is characterised in that the inner plastic part has a recess which stands back inwardly for receiving additional objects between the inner plastic part and the outer part pushed over it.

In a preferred development of this embodiment the recess is elongated and runs along the entire height of the inner plastic part. This means that elongated consumption aids such as (bent) drinking straws or spoons can be housed in the space thus formed.

In order that the space between the inner plastic part and the outer part formed by the recess in the inner plastic part is both sealed to guarantee original condition, but can also be accessed easily from outside when required, the invention proposes the use of an outer part together with an inner part with a recess, with means being provided on the outer part which enable facilitated access to the space formed by the recess between the outer part and the inner plastic part. The access means preferably comprise a pull strip delimited by a perforation.

The cup-shaped combination packing container described in the invention is characterised by a cup-shaped inner part which tapers inward moving downward and a casing-like outer part which lies adjacent to and surrounds the inner plastic part pushed over the inner plastic part, with the inner plastic part having a recess which stands back inwardly for receiving additional objects between the inner plastic part and the outer part pushed over it.

A preferred embodiment of the combination packing container described in the invention is characterised in that the recess is elongated in shape and runs along the whole height of the inner plastic part, that means are present on the outer part which enable facilitated access to the space formed by the recess between the outer part and the inner plastic part, and that the access means comprise a pull strip delimited by a perforation.

Further embodiments are described in the dependent claims.

## BRIEF DESCRIPTION OF THE FIGURES

The invention is described in greater detail below using embodiments in conjunction with the drawings.

- Fig. 1 shows a partially sectional view of a preferred embodiment for an inner plastic part as described in the invention.
- Fig. 2 shows a partially sectional view of a preferred embodiment of an outer part which can be connected with an inner plastic part as shown in Fig. 1 using the process described in the invention to form a combination packing container.
- Fig. 3 shows a partially sectional view of a finished combination packing container as produced using the parts shown in Figs. 1 and 2.
- Fig. 4 shows a partially sectional view of a stack consisting of two containers of the type illustrated in Fig. 3.
- Fig. 5 shows an enlarged section from Fig. 4.
- Figs. 6, 7 show top views of two different, flat folded and glued outer parts with tear-off aids (pull tabs, perforation) for use in the process described in the invention.
- Fig. 8 shows an outer part as shown in Fig. 6 or Fig. 7 being pushed over the inner plastic part illustrated in Fig. 1.

- Figs. 9a-c show three different views of two inner plastic parts stacked one inside the other in a preferred embodiment of the invention with a recess for receiving additional objects between the inner plastic part and the outer part.
- Figs. 10a/b show a combination packing container with a recess in the inner plastic part containing a drinking straw and access means on the outer part in a side view (a) and the corresponding inner plastic part with the drinking straw in a view from beneath (b).

## WAYS OF EXECUTING THE INVENTION

Fig. 1 shows a partially sectional view of a preferred embodiment of an inner plastic part as described in the invention and suitable for the process described in the invention. The half of the diagram to the left-hand side of the dotted line shows a longitudinal section while the right-hand half of the diagram shows a simple side view. In the illustration shown, the cup-shaped inner plastic part 1 is of simple conical design with a diameter which tapers inwards towards the base 9. It should be noted that the simple conical cup represents only one embodiment and that other stackable forms such as rectangular, hexagonal and other polygonal or mixed square/round shapes are equally conceivable within the framework of the invention.

In the example illustrated, the upper edge of the conical wall 2 of the cup-shaped inner plastic part 1 is delimited by a sealing flange 3 by means of which the cup can be sealed. This may, for example, take the form of sealing with aluminium foil. But other edge shapes, such as those illustrated in the left-hand side of Fig. 1 of EP-B1-0 102 522, are also conceivable. Moving downward from the upper edge of the sealing flange towards the base area, the wall 2 of the beaker has no indent. Not until right at the base area is a peripheral rear inset section 5 provided which is delimited upwards by an inward projecting peripheral indent 4, the function of which will be explained in greater detail further on in conjunction with Figs. 4 and 5. Towards the base 9, the rear inset section 5 is delimited by an outward projecting peripheral



shoulder 8 which then becomes the base 9 and forms a ring-shaped bead. The rear inset section 5 itself is divided into two rear inset sections 6 and 7, the upper rear inset section 6 being essentially cylindrical and the lower rear inset section 7 tapering outwards slightly towards the base.

This design of the base area has several considerable advantages. Firstly, the indent 4 provides a support shoulder which means that the cups can be stacked one inside the other in a defined manner. Secondly, the rear inset section 5 creates a “spring base”, i.e. in the event of axial pressure forces the base 9 can move elastically in axial direction. This property is important for the rigidity of the combination packing container and will be discussed in greater detail below. Finally, the geometry of the rear inset section means that the inner plastic part 1 can be deep drawn without the use of costly sliding moulds if a plastic material with increased shrinking properties such as polypropylene (PP) is used, because the deep drawn cup can be removed from a fixed deep drawing mould without difficulty despite the rear inset section 5 due to shrinking.

The base 9 of the inner plastic part 1 can be of various designs. The possibilities are described in EP-B1-0 102 522. In the example illustrated in Fig. 1, the base 9 has an outer contact surface 11 which surrounds a central inset base part 10 in a ring shape.

According to the process described in the invention, an inner plastic part 1 of the type illustrated in Fig. 1 is first produced by being deep drawn from a plastic sheet or another suitable production process. The finished cup is then connected to a casing-like outer part 12, as illustrated in Fig. 2, to form a combination packing container by pushing the outer part 12 upwards over the cup-shaped inner plastic part 1 like a sleeve and affixing it to the inner part. This has the particular advantage that only the product-specific printed outer parts adapted to the product to be packed, which can be easily folded and stored without taking up too much space, have to be held in storage, while the (non-specific) inner plastic parts can be produced directly at the filling machine or at other positions on simple deep drawing machines as and when required and then joined to the outer parts.

The casing-like outer part 12 can be made of various materials and be produced in various manners. The possibilities are described in EP-B1-0 102 522 and EP-B1-0 408 515. If, as is

often the case, the outer part 12 is produced using a cut-out made of cardboard material printed on the inside and/or the outside, the cut-out is, for example, wound around a mandrel to form a casing and then the edges are glued together in an overlap area 13. Naturally, it is also possible to provide the outer part 12 with a separator strip with pull tabs and corresponding perforated lines for better separation from the inner plastic part 1 as is described in EP-B1-0 408 515.

The casing-like outer part 12 is preferably affixed to the cup-shaped inner plastic part 1 by an engaging movement in such a manner that it can be disengaged. Here, the upper edge or the sealing flange 3 and the peripheral shoulder 8 with the rear inset section 5 above it on the inner plastic part 1 function as engaging means. The external diameter of the shoulder 8 is (slightly) larger than the internal diameter of the lower edge 15. The height of the outer part 12 in axial direction is somewhat smaller than the (axial) distance between the underside of the sealing flange 3 and the shoulder 8.

To form the combination packing container 16, 19' as illustrated in Fig. 3 and in an enlarged section in Fig. 5, the casing-like outer part 12 is pushed over the inner plastic part 1 as shown in Fig. 2 until its upper edge 14 pushes against the underside of the sealing flange 3. At the same time, the lower edge 15 of the outer part 12 slides over the shoulder 8 which yields elastically due to its material and geometry and reduces its external diameter. At the same time as the upper edge 14 pushes against the sealing flange, the lower edge 15 slides over the shoulder 8 and releases it again so that the shoulder 8 jumps back and engages in its initial position. The casing-like outer part 12 is thus fixed between the sealing flange 3 and the shoulder 8 on the inner plastic part 1 in such a manner that it can disengage.

At the same time, the upper edge 14 is covered by the sealing flange 3 and the lower edge 15 is covered by the shoulder 8 in a protective manner. This is advantageous if, for example, a casing-like outer part 12 made of a humidity-sensitive cardboard material is to be used. Furthermore, it is also possible for the purpose of protection to crimp over the edges as is known from EP-B1-0 102 522. Depending on the design of the casing-like outer part 12 in comparison to the cup-shaped inner plastic part 1, a more or less tight fit of the outer part 12 on the inner part can be achieved.

As can be seen from Fig. 1, the outer part 12 has a largely smooth casing surface without any weakening indents, etc. For this reason, the outer part 12 is able to absorb relatively large axial pressure forces. Accordingly, in the finished combination packing container the outer part 12 can absorb axial pressure forces applied to the base 9 and the sealing flange 3 of the inner plastic part. The "spring base" mentioned above plays a significant role in this process. If axial pressure is applied to the inner plastic part 1 of the combination packing container 16, the base shifts elastically in the direction of the sealing flange 3 until the shoulder 8 presses against the lower edge 15 of the casing-like outer part 12. If the upper edge 14 of the outer part 12 pushes against the sealing flange 3 at the same time, the axial pressure is largely diverted into the casing-like outer part 12 where it is absorbed. In this way, the rigidity of the combination packing container 16 is increased substantially in comparison with previously known containers such that filled containers can be stacked one on top of the other in several layers without additional aids.

The function of the peripheral indent 4 in the stacking of several combination packing containers 16, 16' is clearly illustrated in Figs. 4 and 5. The parts of the second combination packing container 16' are indicated by means of the same reference numerals (although followed by ') as the corresponding parts of the first combination packing container 16. When containers 16 and 16' are stacked one inside the other, the contact surface 11' of the upper second container 16', which also consists of a casing-like outer part 12', a cup-shaped inner plastic part 1', rear inset sections 6' and 7', a shoulder 8', a contact surface 11', an indent 4' and an inset base part 10', rests on the indent 4 of the first container 16. Here, the inward projecting indent 4, 4' guarantees that an outer part 12, 12' with a smooth casing surface can be used. The stack height, i.e. the additional height created by the stacking of two containers 16, 16' one inside the other, depends substantially on the height of the rear inset section 5. If the height of the rear inset section 5, and therefore also the stack height, is increased, the internal diameter at the indent 4, 4' also increases. This means that the external diameter at the shoulder 8, 8' can also be increased. The shoulder 8, 8' then projects further over the lower edge 15 of the engaged outer part 12, 12', thus improving the engaging function and the protection offered by the lower edge 15.

It has already been mentioned above that to produce the outer part 12, 12', a corresponding cut-out is wound into a casing and the edges are glued together in an overlap area 13. In this way, the resulting tubular outer part is immediately ready to be pushed over the inner plastic part 1, 1'. In other cases it is, however, desirable to have the outer parts available in flattened form for space-saving storage and transportation. As illustrated in Figs 6 and 7, this is achieved when the casing-like outer part 12 is produced by folding a cut-out along two fold lines 24, 25 and 26, 27 and the edges are glued together in an overlap area. Hereby it is useful if the fold lines 24, 25 and 26, 27 are stamped into the material during production of the cut-out.

In the examples shown in Figs. 6 and 7, additional tear-off aids are provided in the overlap area 13 of the outer part 12. A pull tab 17 positioned at the top of the overlap area can be pulled downward by hand to separate the outer part 12 at the overlap area 13. Separation is facilitated by the fact that the overlap area 13 is delimited on one side by a perforation 18 which can also be introduced into the material during production of the cut-out. In the example shown in Fig. 6, one of the fold lines (24) also forms the other delimitation line of the overlap area 13 and operates in a similar way to a perforation, thereby supporting the tear-off process. In the example shown in Fig. 7, however, the overlap area 13 lies in the centre between the fold lines 26, 27. In Fig. 8, the outer parts 12 illustrated in Figs. 6 and 7 are pushed up over the inner plastic part 12 from the base in the same way as described above. The only difference is that the flat folded outer parts shown in Figs. 6 and 7 have to be shaped into a tubular form before they can be pushed over the inner plastic part 1.

Due to the separate production of the inner plastic part 1, 1' and the outer part 12, 12' in the process described in the invention, it is possible to give the combination packing container 16, 16' a space between the inner plastic part and the outer part in which various additional objects such as consumption aids in the form of drinking straws or spoons, or promotional materials, gifts, etc. which is accessible from the outside by giving the inner plastic part a special shape. In order to create such a space, as shown in Fig. 9, during production (by deep drawing or another similar process) the inner plastic part 1, 1' is provided with a recess which stands back inwardly as shown in the two side views in Figs. 9(a) and 9(b) and in the underside view in Fig. 9(c).

If the space is preferably to receive an elongated object such as a drinking straw (20 in Fig. 10) or a spoon, the recess 19, 19' is given a corresponding elongated shape and runs along the entire height of the inner plastic part 1, 1' between the base 9 and the underside of the sealing flange 3. Naturally, the recess 19, 19' can also be shaped and positioned differently if the application in question so requires. Again naturally, several recesses can also be provided at several points on the inner plastic part 1, 1' if so desired.

As shown in Fig. 8, during the finishing of the combination packing container the outer part is pushed over the inner plastic part 1, 1' after the desired object has been placed in the recess 19, 19'. In a continuous, downward running recess as shown in Fig. 9, it is, however, conceivable that the additional object be pushed into the space from below after the outer part 12 has already been pushed completely over the inner plastic part 1, 1'. The additional object is then held in its original condition in the space until it is removed from the space by the consumer.

As shown in Fig. 10 (a), in order to facilitate the removal of the additional object from the space between the inner plastic part 1, 1' and the outer part 12, 12', means are preferably provided on the outer part 12 which enable facilitated access to the space formed by the recess 19 between the outer part 12 and the inner plastic part 1. Primarily consideration for the access means in this case is given to a pull strip 21 delimited by a perforation 22 which can be positioned at either the upper edge 14 and/or the lower edge 15 of the outer part 12 (as illustrated in Fig. 10 (a)). To make the pull strip 21 easy to grip, a grip opening 23 can usefully be left open at the edge of the pull strip 21. Here it is clearly self-evident that when an outer part 12 provided with a pull strip 21 is pushed over an inner plastic part 1, both parts must be positioned so that the pull strip 21 lies over the recess 19 when it has been pushed into place.

In order to remove the object (20) from the space, the pull strip 21 is then torn along the perforation 22. Since the pull strip 21 is locally delimited, the outer part 12 remains fixed to the inner plastic part 1. Moreover, it is conceivable to design the pull strip 21 so that it curves inwards slightly to reliably prevent the object from accidentally falling out of the space. If a long drinking straw should be added to the (height-delimited) combination packing container 16 illustrated in Fig. 10 as the additional object, for example, it should preferably be bent at

180° in a flexible central section so that it is reduced to half its length and be placed or pushed into the space in this bent condition.

In principle, all the materials and dimensions already described in patent specifications EP-B1-0 102 522 and EP-B1-0 408 515 may be used for this combination packing container. It is particularly preferable to produce the inner plastic part 1, 1' by deep drawing it from a sheet of PP and to use cut-outs of printed cardboard material for the outer part 12, 12'. If the outer part 12, 12' is to be made of plastic, in order to simplify processing it is advantageous if the same material is used as for the inner plastic part 1, 1'.

## LIST OF TERMS

1, 1'	Inner plastic part (cup-shaped)
2	Wall
3	Sealing flange
4, 4'	Indent (peripheral)
5	rear inset section (peripheral)
6, 6', 7, 7'	rear inset sections
8, 8'	Shoulder (peripheral)
9	Base
10, 10'	Inset base part
11, 11'	Contact surface (peripheral)
12, 12'	Outer part (casing-like)
13	Overlap area
14	Upper edge (outer part)
15	Lower edge (outer part)
16, 16'	Combination packing container
17	Pull tab
18	Perforation
19, 19'	Recess (inner part)
20	Drinking straw



21	Pull strip
22	Perforation
23	Grip opening
24, ...27	Fold line

## CLAIMS

1. Process for producing a cup-shaped combination packing container (16, 16') which consists of an inner cup-shaped plastic part (1, 1') which tapers inward moving downward and an outer casing-like plastic part (12, 12') which lies adjacent to and surrounds the inner cup-shaped plastic part (1, 1'), characterised in that the casing-like outer part (12, 12') is pushed over the finished extruded cup-shaped inner plastic part (1, 1') and subsequently affixed to the cup-shaped inner plastic part (1, 1').

2. Process according to Claim 1, characterised in that a cup-shaped inner plastic part (1, 1') is used which comprises engaging means (3, 8) which engage and disengage with the casing-like outer part (12, 12') in order to affix it to the cup-shaped inner plastic part (1, 1').

3. Process according to Claim 2, characterised in that the engaging means comprises a peripheral shoulder (8, 8') positioned in the base area of the cup-shaped inner plastic part (1, 1'), the external diameter of which is greater than the internal diameter of the lower edge (15) of the casing-like outer part (12), and that when the casing-like outer part (12, 12') is pushed over the cup-shaped inner plastic part (1, 1') the lower edge (15) thereof is pushed over the peripheral shoulder (8, 8') until it engages behind the shoulder (8, 8').

4. Process according to Claim 3, characterised in that the engaging means further comprise an upper, outward projecting edge on the cup-shaped inner plastic part (1, 1') and that when the casing-like outer part (12, 12') is pushed over the cup-shaped plastic inner part (1, 1') the upper edge (14) thereof pushes up against the edge and after engaging is held between the edge and the peripheral shoulder (8, 8').

5. Process according to Claim 4, characterised in that the upper edge of the cup-shaped inner plastic part (1, 1') is designed as a sealing flange (3).

6. Process according to one of Claims 1 to 5, characterised in that a casing-like outer part (12, 12') is used which consists of a plastic, in particular a plastic sheet of the same material as the plastic inner part (1, 1').



7. Process according to one of Claims 1 to 5, characterised in that a casing-like outer part (12, 12') is used which consists essentially of paper or cardboard material.

8. Process according to one of Claims 6 or 7, characterised in that the casing-like outer part (12, 12') is printed on the outside and/or the inside.

9. Process according to one of Claims 1 to 8, characterised in that to produce the casing-like outer part (12, 12') a cut-out is wound into a casing and the edges are glued together in an overlap area (13).

10. Process according to one of Claims 1 to 8, characterised in that to produce the casing-like outer part (12, 12') a cut-out is folded along two fold lines (24, 25 and 26, 27) and the side edges are glued together in an overlap area (13).

11. Process according to Claim 10, characterised in that one of the fold lines (24) forms one of the separation lines of the overlap area (13) and that the overlap area is delimited on one side by a perforation (18).

12. Inner plastic part (1, 1') for a process according to Claims 1 to 11, characterised in that the plastic inner part (1, 1') is cup-shaped and tapers inward moving downward and that engaging means (3, 8) are provided on the plastic inner part (1, 1') in which the casing-like outer part (12, 12') can engage, in such a manner that it can disengage, in order to affix it to the cup-shaped inner plastic part (1, 1').

13. Inner plastic part according to Claim 12, characterised in that the engaging means comprise a peripheral shoulder positioned in the base area of the inner plastic part (1, 1'), the external diameter of which is greater than the diameter of the lower edge (15) of the casing-like outer part (12).

14. Inner plastic part according to Claim 13, characterised in that the engaging means further comprise an upper, outward projecting edge on the cup-shaped inner plastic part (1, 1'), in particular in the form of a sealing flange (3), up against which the upper edge (14) of

the casing-like outer part (12, 12') pushes when it is pushed over the cup-shaped inner plastic part (1, 1').

15. Plastic inner part according to one of Claims 13 or 12, characterised in that to improve stackability a peripheral inward projecting indent (4, 4') is provided in the base area of the cup-shaped inner plastic parts (1, 1'), that the peripheral inward projecting indent (4, 4') is the upper limit of a peripheral rear inset section (5), and that the peripheral rear inset section is delimited below by the peripheral shoulder (8, 8').

16. Inner plastic part according to one of Claims 12 to 15, characterised in that the inner plastic part (1, 1') is formed out of a plastic sheet, preferably by means of deep-drawing.

17. Inner plastic part according to Claim 16, characterised in that the inner plastic part (1, 1') consists of a plastic with increased shrinking properties, preferably of polypropylene (PP).

18. Inner plastic part according to one of Claims 12 to 17, characterised in that the inner plastic part (1, 1') has a recess (19, 19') which stands back inwardly for receiving additional objects (20) between the inner plastic part (1, 1') and the outer part (12) pushed over it.

19. Inner plastic part according to Claim 18, characterised in that the recess (19, 19') is elongated and runs along the entire height of the inner plastic part (1, 1').

20. Outer part (12) for use with an inner plastic part (1, 1') according to one of Claims 18 and 19, characterised in that means (21, 22, 23) are present on the outer part (12) which enable facilitated access to the space formed by the recess (19, 19') between the outer part (12) and the inner plastic part (1, 1').

21. Outer part according to Claim 20, characterised in that the access means comprise a pull strip (21) delimited by means of a perforation (22).

22. Outer part according to Claim 21, characterised in that pull tab (21) is positioned on the upper edge (14) and/or the lower edge (15) of the outer part (12), and that a grip opening (23) is left open on the edge of the pull strip (21).

23. Cup-shaped combination packing container (16, 16'), characterised by an inner cup-shaped plastic part (1, 1') which tapers inward moving downward and an outer casing-like part (12) which is pushed over the inner cup-shaped plastic part (1, 1') and surrounds the inner cup-shaped plastic part (1, 1'), with the inner plastic part (1, 1') having a recess (19, 19') which stands back inwardly for receiving additional objects (20) between the inner plastic part (1, 1') and the outer part (12) pushed over it.

24. Combination packing container according to Claim 23, characterised in that the recess (19, 19') has an elongated shape and runs along the entire height of the inner plastic part (1, 1').

25. Combination packing container according to one of Claims 23 and 24, characterised in that means (21, 22, 23) are provided on the outer part (12) to enable facilitated access to the space formed by the recess (19, 19') between the outer part (12) and the inner plastic part (1, 1').

26. Combination packing container according to Claim 25, characterised in that the access means comprise a pull strip (21) delimited by a perforation.

27. Combination packing container according to Claim 26, characterised in that the pull strip (21) is positioned on the upper edge (14) and/or the lower edge (15) of the outer part (12) and that a grip opening (23) is left open on the edge of the pull strip (21).

28. Combination packing container in accordance with one of Claims 23 to 27, characterised in that at least one additional object is housed in the area of the recess (19, 19') between the inner plastic part (1, 1') and the outer part (12).

29. Combination packing container in accordance with Claim 28, characterised in that the at least one additional object is a consumption aid, in particular a drinking straw (20) or a spoon.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/CH 96/00457

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 B65D25/36 B65D77/24

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 B29C B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	EP 0 371 918 A (RUNDPACK) 6 June 1990	1-3,6-8, 12,13, 15,16
Y	see column 6, line 54 - column 7, line 52; figure 5	4,5,14, 18,19
A	---	11
X	DE 296 11 301 U (WILKE ET AL.) 29 August 1996	1,2, 7-10,12, 16
Y	see page 13, paragraph 2 - page 15, paragraph 1	4,5,14
A	see page 16, last paragraph - page 17, paragraph 1; claim 1; figures ---	11
	-/--	

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- \*X\* document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*Z\* document member of the same patent family

Date of the actual completion of the international search

21 November 1997

Date of mailing of the international search report

05.12.97

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Bridault, A

# INTERNATIONAL SEARCH REPORT

Inter... .nal Application No

PCT/CH 96/00457

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 3 231 128 A (KLEIN) 25 January 1966 see column 1, line 34 - column 2, line 39; figures 4,5 ---	1,2,6-9, 12,16
X	DE 295 13 093 U (WILKE ET AL.) 12 October 1995 see page 6, paragraph 2; figures ---	1,2, 7-10,12, 16,17
X	EP 0 408 515 B (SANDHERR PACKUNGEN AG) 22 September 1993 cited in the application see figures ---	20-22
Y A	FR 2 673 606 A (LANGEVIN) 11 September 1992 see page 7, line 1 - line 25; figures 14,17 ---	26,27 11
X Y	GB 2 300 172 A (JAG JUDGE) 30 October 1996 see page 1, last paragraph - page 2, paragraph 1; figure 1 -----	23-25, 28,29 18,19, 26,27
A,P		18,19, 23-29

# INTERNATIONAL SEARCH REPORT

International application No

PCT/CH 96/00457

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons

1. ☐ Claims Nos  
because they relate to subject matter not required to be searched by this Authority, namely
2. ☐ Claims Nos  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically
3. ☐ Claims Nos  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6 4(a)

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows

1. CLAIMS 1-17
2. CLAIMS 18-29

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims, it is covered by claims Nos.

Remark on Protest



The additional search fees were accompanied by the applicant's protest



No protest accompanied the payment of additional search fees

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CH 96/00457

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